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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/866,035      | 05/25/2001  | Akira Yamaguchi      | 09792909-5037       | 4263             |

7590 07/01/2004

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| EXAMINER |
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CHANEY, CAROL DIANE

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

1745

DATE MAILED: 07/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 09/866,035             | YAMAGUCHI ET AL.    |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Carol Chaney           | 1745                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 April 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6,8-12,14-22,24 and 25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-12,14-22,24 and 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1745

### ***Summary***

Claims 1-6, 8-12, 14-22, 24 and 25 are present in the case.

Claims 4, 8, 11, 12, 14, 19, and 24 are rejected under 35 USC 112 second paragraph.

Claims 1-5, 8 and 25 are rejected under 35 U.S.C. 102(b).

Claims 6, 9-12, 14, 15-22 and 24 are rejected under 35 U.S.C. 103(a).

Applicants state claims 7, 13 and 23 are withdrawn from consideration, but in their listing of claims, identify claims 7, 13, and 23 as "cancelled". It is unclear what status applicants intend for claims 7, 13, and 23. The case has been treated as if claims 7, 13, and 23 have been cancelled, and thus claims 1-6, 8-12, 14-22, 24 and 25 are considered present in the case.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4, 8, 11, 12, 14, 19, and 24 recite the limitation "said methoxybenzene compound". There is insufficient antecedent basis for this limitation in the claims. The independent claims 1, 9, and 17 are amended to delete the recitation of methoxybenzene compounds, and thus there is no antecedent basis in claims 4, 8, 11, 12, 14, 19, and 24 for "said methoxybenzene compounds".

***Claim Rejections - 35 USC § 102***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-5, 8 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Komaru et al., JP 10-308236 A.

Komaru et al. disclose lithium secondary batteries which include a  $\text{LiCoO}_2$  cathode active material and a carbon anode active material. The active materials are coated on both sides of the current collectors. (Paragraphs 177-184) The electrolyte includes a non-aqueous solvent. Vinylene carbonate is disclosed as a solvent additive, in an amount less than 20 wt%. (Paragraph 105.) Phenol, an antioxidant, is disclosed as an electrolyte solvent component. (See paragraph 204, formula 74.) The solvent further includes methoxybenzene compounds. (Paragraph 188) The methoxybenzene compound concentration is preferably 0.005–0.8 M, which is in applicants' claimed range of 0.01 to 10 wt%. (Paragraph 98.) Formulas 12-14 illustrate fluoro-anisoles as the methoxybenzene compounds. (Paragraphs 51-53).

***Claim Rejections - 35 USC § 103***

Claims 6, 9-12, 14, 15-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mayer, US Patent 5,783,333 in view of Komaru et al., JP 10-308236 A.

Art Unit: 1745

Mayer discloses lithium secondary batteries comprising composite positive electrodes. The composite cathodes contain lithium nickel cobalt metal oxides together with a lithium manganese metal oxide of the formula  $\text{Li}_x\text{Mn}_{2-r}\text{M1}_r\text{O}_4$ , where  $r$  is a value between 0 and 1 and M1 is chromium, titanium, tungsten, nickel, cobalt, iron, tin, zinc, zirconium, silicon, or a combination thereof. (Note abstract.) The cell will include (1) a cell container, (2) a composite positive electrode (3) an intercalation negative electrode capable of reversibly taking up lithium on charge and releasing lithium on discharge, (4) an electrolyte conductive to lithium ions, and (5) a separator between the negative electrode and positive electrode. (Column 13, lines 24-31.) The electrolyte preferably includes a mixture of ethylene carbonate, diethyl carbonate and dimethyl carbonate with a dissolved lithium-containing salt, and may also include of polymer or gelling agent. (Column 4, lines 52-64.) Mayer thus discloses gelled electrolytes. A battery may be constructed by winding a thin negative electrode sheet and a thin positive electrode sheet separated by a separator sheet together into a spiral roll and placing the roll in the battery can. (Column 13, lines 35-40.)

The disclosure of Mayer differs from applicants' invention in that Mayer does not specifically disclose the addition of vinylene carbonate, antioxidants and/or methoxybenzene in the battery electrolyte. Komaru et al. disclose using vinylene carbonate and anti-oxidants, along with methoxybenzene, as a lithium battery electrolyte composition. The addition of such compounds are taught as decreasing irreversible reactions at the lithium battery electrodes and thus improving cycle life (capacity retention) of the battery. (See Komaru, paragraph 13.) It would have been

Art Unit: 1745

obvious to one of ordinary skill in the art to add any of methoxybenzene, vinylene carbonate or antioxidants as additives to the batteries disclosed by Mayer because Komaru teaches these additives will improve the cycle life of the batteries.

### ***Response to Arguments***

Applicant's arguments filed 12 April 2004 have been fully considered but they are not persuasive.

Applicants' assert Komaru et al. never teaches or describes a nonaqueous electrolyte having both a vinylene carbonate and an antioxidant. However, as discussed above, Komaru et al. disclose non aqueous electrolytes containing vinylene carbonate and phenol. Thus, Komaru et al. teaches and suggests a nonaqueous electrolyte having both a vinylene carbonate and an antioxidant.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any


Art Unit: 1745

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (571) 272-1284. The examiner can normally be reached on Mon - Fri 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Carol Chaney  
Primary Examiner  
Art Unit 1745

28 June 2004